US006024326A

United States Patent [19]

Godfrey et al.

[11] Patent Number: 6,024,326

[45] Date of Patent: Feb. 15, 2000

[54] **WATER-IMPACT RELEASE MECHANISM**

[75] Inventors: **Daniel M. Godfrey**, North Kingstown; **Gary R. Berlam**, Warwick, both of R.I.

[73] Assignee: **The United States of America as represented by the Secretary of the Navy**, Washington, D.C.

[21] Appl. No.: **09/062,566**

[22] Filed: **Apr. 20, 1998**

[51] **Int. Cl.**[7] **B64D 1/02**

[52] **U.S. Cl.** ..... **244/151 B**; 244/138 R; 244/139

[58] **Field of Search** ..... 244/138 R, 139, 244/151 B, 137.3, 137.4; 114/22; 74/527

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,778,308	1/1957	Fogal et al.	244/151 B
2,880,687	4/1959	Kilvert	114/22
3,066,632	12/1962	Bemis	114/22
4,132,147	1/1979	Contaldo	244/137.3
4,592,524	6/1986	Nohern et al.	244/138 R

Primary Examiner—Peter M. Poon
Assistant Examiner—Charles R Ducker, Jr.
Attorney, Agent, or Firm—Michael J. McGowan; James M. Kasischke; Prithvi C. Lall

[57] **ABSTRACT**

A water-impact release mechanism has a hub with a first sleeve coupled thereto. The first sleeve has a plurality of circumferentially distributed holes therein. A spring assembly, coupled to the hub, extends into the first sleeve. In a relaxed state, the spring assembly obstructs the holes while, in a compressed state, the spring assembly does not obstruct the holes. A second sleeve, concentric with the first sleeve, is elastically coupled to the hub and biased away therefrom. The second sleeve has an inwardly-facing annular groove. A ball resides in each of the holes and is large enough to extend beyond the confines of its hole. When the bias of the second sleeve is overcome, the annular groove aligns with the holes in the first sleeve thereby allowing the radial outward movement of the balls. A plate, coupled to the second sleeve, extends radially outward therefrom to define a water-impact surface. Water-impact forces impinging on the plate cause the bias of the second sleeve to be overcome such that the second sleeve abuts the hub.

13 Claims, 2 Drawing Sheets